

OIL ANALYSIS REPORT

Sample Rating Trend

NORMAL





Machine Id 525017-715 **Diesel Engine**

PETRO CANADA DURO

DIAGNOSIS

Recommendation

Resample at the next service interval to monitor.

Metal levels are typical for a new component breaking in.

Contamination

There is no indication of any contamination in the

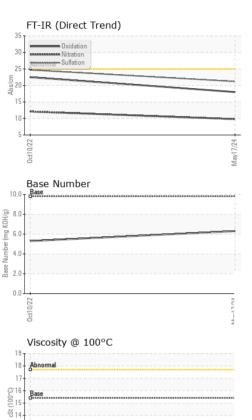
Fluid Condition

The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

Water	N SHP 15W40 (- GAL)		Oct2022	May2024		
Client Info GFL0099633 GFL0061049 Cample Date Client Info 17 May 2024 10 Oct 2022 Machine Age mils Client Info 0 0 0 0 0 0 0 0 0	OAMBLE INFOR	MATION	l de la	12 24 /1			111
Client Info	SAMPLE INFOR	MATION	method	limit/base	current	history1	history2
Machine Age mls Client Info 0 0 0 0 0 0 0 0 0	Sample Number		Client Info		GFL0099633	GFL0061049	
Dil Age	Sample Date		Client Info		17 May 2024	10 Oct 2022	
Client Info	Machine Age	mls	Client Info		17830	420310	
NORMAL NORMAL CONTAMINATION method limit/base current history1 history1 history1 history1 history1 history2 water WC Method >3.0 <1.0 <1.0 <	Oil Age	mls	Client Info		0	0	
CONTAMINATION	Oil Changed		Client Info		Changed	Changed	
Water	Sample Status				NORMAL	NORMAL	
Water WC Method >0.2 NEG NEG	CONTAMINAT	ION	method	limit/base	current	history1	history2
WEAR METALS	Fuel		WC Method	>3.0	<1.0	<1.0	
WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >120 62 53 Chromium ppm ASTM D5185m >20 2 2 2 Nickel ppm ASTM D5185m >20 1 1 Silver ppm ASTM D5185m >2 0 -1 Aluminum ppm ASTM D5185m >2 0 -1 Aluminum ppm ASTM D5185m >2 0 -1 Aluminum ppm ASTM D5185m >40 4 6 Lead ppm ASTM D5185m >40 4 6 Copper ppm ASTM D5185m >1 2 Vanadium ppm ASTM D5185m 0 -1 1 Cadmium ppm ASTM D5185m 0 2 0	Water		WC Method	>0.2	NEG	NEG	
Chromium	Glycol		WC Method		NEG	NEG	
Chromium	WEAR METAL	S	method	limit/base	current	history1	history2
Chromium			ASTM D5185m	>120	62		
Nickel							
Silver							
Silver							
Aluminum							
Lead							
Copper ppm ASTM D5185m >330 4 10 Tin ppm ASTM D5185m >15 1 2 Vanadium ppm ASTM D5185m 0 <1							
Tin							
Vanadium ppm ASTM D5185m 0 <1 Cadmium ppm ASTM D5185m 0 0 <1 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 2 0 Barium ppm ASTM D5185m 0 <1 0 Molybdenum ppm ASTM D5185m 0 <1 2 Manganese ppm ASTM D5185m 0 <1 2 Magnesium ppm ASTM D5185m 1070 1171 1068 Phosphorus ppm ASTM D5185m 1270 1122 910 Zinc ppm ASTM D5185m 1270 1276 1196 Sulfur ppm ASTM D5185m 2060 2813 2743 CONTAMINANTS method limit/base current	• •				-		
Cadmium ppm ASTM D5185m 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 2 0 Barium ppm ASTM D5185m 0 <1				>10			
ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 2 0 Barium ppm ASTM D5185m 0 <1					-		
Boron ppm ASTM D5185m 0 2 0		ppm					
Barium							history2
Molybdenum ppm ASTM D5185m 60 64 60 Manganese ppm ASTM D5185m 0 <1							
Manganese ppm ASTM D5185m 0 <1 2 Magnesium ppm ASTM D5185m 1010 916 890 Calcium ppm ASTM D5185m 1070 1171 1068 Phosphorus ppm ASTM D5185m 1150 1122 910 Zinc ppm ASTM D5185m 1270 1276 1196 Sulfur ppm ASTM D5185m 2060 2813 2743 CONTAMINANTS method limit/base current history1 history1 Silicon ppm ASTM D5185m >25 7 8 Sodium ppm ASTM D5185m 3 12 Potassium ppm ASTM D5185m >20 10 17 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7624 >20	Barium	ppm	ASTM D5185m	0	<1	0	
Magnesium ppm ASTM D5185m 1010 916 890 Calcium ppm ASTM D5185m 1070 1171 1068 Phosphorus ppm ASTM D5185m 1150 1122 910 Zinc ppm ASTM D5185m 1270 1276 1196 Sulfur ppm ASTM D5185m 2060 2813 2743 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 7 8 Sodium ppm ASTM D5185m >20 10 17 Potassium ppm ASTM D5185m >20 10 17 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.4 0.5 Sulfation Abs/.1mm *ASTM D78415<	Molybdenum	ppm	ASTM D5185m	60	64	60	
Calcium ppm ASTM D5185m 1070 1171 1068 Phosphorus ppm ASTM D5185m 1150 1122 910 Zinc ppm ASTM D5185m 1270 1276 1196 Sulfur ppm ASTM D5185m 2060 2813 2743 CONTAMINANTS method limit/base current history1 history1 Silicon ppm ASTM D5185m >25 7 8 Sodium ppm ASTM D5185m >20 10 17 Potassium ppm ASTM D5185m >20 10 17 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.4 0.5 Sulfation Abs/.1mm *ASTM D7415 >30 21.2 24.7 FLUID DEGRADATION method l	Manganese	ppm	ASTM D5185m	0	<1	2	
Phosphorus ppm ASTM D5185m 1150 1122 910 Zinc ppm ASTM D5185m 1270 1276 1196 Sulfur ppm ASTM D5185m 2060 2813 2743 CONTAMINANTS method limit/base current history1 history3 Silicon ppm ASTM D5185m >25 7 8 Sodium ppm ASTM D5185m 3 12 Potassium ppm ASTM D5185m >20 10 17 INFRA-RED method limit/base current history1 history1 Soot % % *ASTM D7844 >4 0.4 0.5 Nitration Abs/cm *ASTM D7415 >30 21.2 24.7 FLUID DEGRADATION method limit/base current history1 history1 Oxidation Abs/.1mm *ASTM D7414	Magnesium	ppm	ASTM D5185m	1010	916	890	
Zinc ppm ASTM D5185m 1270 1276 1196 Sulfur ppm ASTM D5185m 2060 2813 2743 CONTAMINANTS method limit/base current history1 history1 Silicon ppm ASTM D5185m >25 7 8 Sodium ppm ASTM D5185m 3 12 Potassium ppm ASTM D5185m >20 10 17 INFRA-RED method limit/base current history1 history1 Soot % *ASTM D7844 >4 0.4 0.5 Nitration Abs/cm *ASTM D7624 >20 9.8 12.1 Sulfation Abs/.1mm *ASTM D7415 >30 21.2 24.7 FLUID DEGRADATION method limit/base current history1 history1 Oxidation Abs/.1mm *ASTM D7414 >25 18.0 22.5	Calcium	ppm	ASTM D5185m	1070	1171	1068	
Sulfur ppm ASTM D5185m 2060 2813 2743 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 7 8 Sodium ppm ASTM D5185m 3 12 Potassium ppm ASTM D5185m >20 10 17 INFRA-RED method limit/base current history1 history3 Soot % % *ASTM D7844 >4 0.4 0.5 Nitration Abs/cm *ASTM D7624 >20 9.8 12.1 Sulfation Abs/.1mm *ASTM D7415 >30 21.2 24.7 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 18.0 22.5	Phosphorus	ppm	ASTM D5185m	1150	1122	910	
CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 7 8 Sodium ppm ASTM D5185m 3 12 Potassium ppm ASTM D5185m >20 10 17 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.4 0.5 Nitration Abs/cm *ASTM D7624 >20 9.8 12.1 Sulfation Abs/.1mm *ASTM D7415 >30 21.2 24.7 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 18.0 22.5	Zinc	ppm	ASTM D5185m	1270	1276	1196	
Silicon ppm ASTM D5185m >25 7 8 Sodium ppm ASTM D5185m 3 12 Potassium ppm ASTM D5185m >20 10 17 INFRA-RED method limit/base current history1 history1 Soot % % *ASTM D7844 >4 0.4 0.5 Nitration Abs/cm *ASTM D7624 >20 9.8 12.1 Sulfation Abs/.1mm *ASTM D7415 >30 21.2 24.7 FLUID DEGRADATION method limit/base current history1 history1 Oxidation Abs/.1mm *ASTM D7414 >25 18.0 22.5	Sulfur	ppm	ASTM D5185m	2060	2813	2743	
Sodium ppm ASTM D5185m 3 12 Potassium ppm ASTM D5185m >20 10 17 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.4 0.5 Nitration Abs/cm *ASTM D7624 >20 9.8 12.1 Sulfation Abs/.1mm *ASTM D7415 >30 21.2 24.7 FLUID DEGRADATION method limit/base current history1 history1 Oxidation Abs/.1mm *ASTM D7414 >25 18.0 22.5	CONTAMINAN	ITS	method	limit/base	current	history1	history2
Potassium ppm ASTM D5185m >20 10 17 INFRA-RED method limit/base current history1 history1 Soot % % *ASTM D7844 >4 0.4 0.5 Nitration Abs/cm *ASTM D7624 >20 9.8 12.1 Sulfation Abs/.1mm *ASTM D7415 >30 21.2 24.7 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 18.0 22.5	Silicon	ppm	ASTM D5185m	>25	7	8	
INFRA-RED	Sodium	ppm	ASTM D5185m		3	12	
Soot % % *ASTM D7844 >4 0.4 0.5 Nitration Abs/cm *ASTM D7624 >20 9.8 12.1 Sulfation Abs/.1mm *ASTM D7415 >30 21.2 24.7 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 18.0 22.5	Potassium	ppm	ASTM D5185m	>20	10	17	
Nitration Abs/cm *ASTM D7624 >20 9.8 12.1 Sulfation Abs/.1mm *ASTM D7415 >30 21.2 24.7 FLUID DEGRADATION method limit/base current bistory1 history1 history1 Oxidation Abs/.1mm *ASTM D7414 >25 18.0 22.5	INFRA-RED		method	limit/base	current	history1	history2
Sulfation Abs/.1mm *ASTM D7415 >30 21.2 24.7 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 18.0 22.5	Soot %	%	*ASTM D7844	>4	0.4	0.5	
FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 18.0 22.5	Nitration	Abs/cm	*ASTM D7624	>20	9.8	12.1	
Oxidation	Sulfation	Abs/.1mm	*ASTM D7415	>30	21.2	24.7	
	FLUID DEGRA	OITAC	method	limit/base	current	history1	history2
	Oxidation	Abs/.1mm	*ASTM D7414	>25	18.0	22.5	

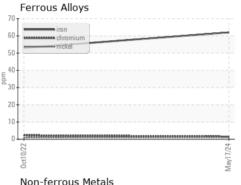


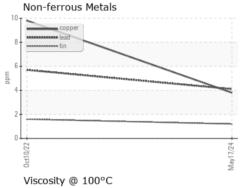
OIL ANALYSIS REPORT

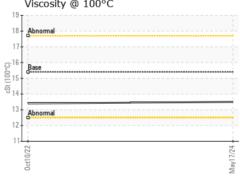


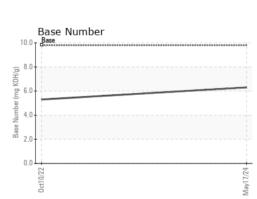
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	
Precipitate	scalar	*Visual	NONE	NONE	NONE	
Silt	scalar	*Visual	NONE	NONE	NONE	
Debris	scalar	*Visual	NONE	NONE	NONE	
Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	
Appearance	scalar	*Visual	NORML	NORML	NORML	
Odor	scalar	*Visual	NORML	NORML	NORML	
Emulsified Water	scalar	*Visual	>0.2	NEG	NEG	
Free Water	scalar	*Visual		NEG	NEG	

FLUID PROPE	ERITES	method	ilmit/base	current	nistory i	nistory2
Visc @ 100°C	cSt	ASTM D445	15.4	13.5	13.4	











13 Abnormal 12



Certificate 12367

Laboratory Sample No.

Lab Number : 06196324 Unique Number : 11058447

Test Package : FLEET

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 : GFL0099633

Received : 31 May 2024 Tested Diagnosed

: 03 Jun 2024 : 03 Jun 2024 - Wes Davis

GFL Environmental - 633 - Grand Haven 1680 Peach St Whitehall, MI US 49461

Contact: Derek Kater dkater@gflenv.com T:

Contact/Location: Derek Kater - GFL633

To discuss this sample report, contact Customer Service at 1-800-237-1369. * - Denotes test methods that are outside of the ISO 17025 scope of accreditation.

Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012)

Report Id: GFL633 [WUSCAR] 06196324 (Generated: 06/04/2024 06:55:14) Rev: 1

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